CLAIMS

1. A method for mitigating adjacent channel interference (ACI) in a wireless communication system, comprising:

determining a presence or absence of ACI in each of one or more frequency ranges in a pre-processed signal comprised of a desired signal component;

selecting a particular filter response from among a plurality of possible filter responses based on the determined presence or absence of ACI in each of the one or more frequency ranges; and

filtering the pre-processed signal with the selected filter response.

2. The method of claim 1, wherein the presence or absence of ACI in the pre-processed signal is determined by

filtering the pre-processed signal with a respective ACI detection filter for each of the one or more frequency ranges, and

determining the presence or absence of ACI in each frequency range based on a filtered signal from the respective ACI detection filter.

3. The method of claim 2, wherein the presence or absence of ACI in the pre-processed signal is further determined by

estimating an energy of the filtered signal from each ACI detection filter, and

comparing the estimated energy for each ACI detection filter against a respective threshold, wherein the presence or absence of ACI in each frequency range is determined based on a result of the comparison.

4. The method of claim 2, wherein each ACI detection filter is implemented as a bandpass filter.

5. The method of claim 2, wherein each ACI detection filter has a response approximately matched to a spectral profile of the ACI in the frequency range being detected.

6. The method of claim 2, wherein the pre-processed signal is filtered with two ACI detection filters for ACI at an upper band-edge and a lower band-edge of the desired signal component.

7. The method of claim 6, wherein each ACI detection filter has a response that overlaps a respective band-edge of the desired signal component.

8. The method of claim 1, wherein the presence or absence of ACI in the pre-processed signal is determined via signaling.

9. The method of claim 1, wherein the plurality of possible filter responses are provided by a plurality of sets of filter coefficients.

10. The method of claim 9, wherein the plurality of sets of filter coefficients are for a finite impulse response (FIR) filter.

11. The method of claim 1, wherein the plurality of possible filter responses include a first filter response selected for use if ACI is determined to be present at an upper band-edge of the desired signal component.

12. The method of claim 1, wherein the plurality of possible filter responses include a second filter response selected for use if ACI is determined to be present at a lower band-edge of the desired signal component.

13. The method of claim 1, wherein the plurality of possible filter responses include a third filter response selected for use if ACI is determined to be present at both an upper band-edge and a lower band-edge of the desired signal component.

14. The method of claim 1, wherein the plurality of possible filter responses include a fourth filter response selected for use if ACI is determined to be absent from the pre-processed signal.

15. The method of claim 1, wherein each of the plurality of possible filter responses is derived to maximize signal-to-noise-and-interference ratio (SINR) based on a respective hypothesis for the ACI in the pre-processed signal.

16. The method of claim 15, wherein each hypothesis is indicative of a hypothesized location and spectral profile for the ACI in the pre-processed signal.

17. A method for mitigating adjacent channel interference (ACI) in a CDMA system, comprising:

pre-processing a received signal comprised of a desired signal component;

filtering the pre-processed signal with a respective ACI detection filter for each of one or more frequency ranges;

determining a presence or absence of ACI in each frequency range based on an estimated energy of a filtered signal from the respective ACI detection filter and a threshold;

selecting a particular filter response from among a plurality of possible filter responses based on the determined presence or absence of ACI in each of the one or more frequency ranges, wherein the plurality of possible filter responses are provided by a plurality of sets of filter coefficients for a finite impulse response (FIR) filter; and

filtering the pre-processed signal with the selected filter response.

18. A method for detecting adjacent channel interference (ACI), comprising:

filtering a pre-processed signal, comprised of a desired signal component, with a respective ACI detection filter for each of one or more frequency ranges;

estimating an energy of a filtered signal from each ACI detection filter;

comparing the estimated energy for each ACI detection filter against a respective threshold; and

providing an indication of a presence or absence of ACI in each frequency range based on a result of the comparison.

19. A memory communicatively coupled to a digital signal processing device (DSPD) capable of interpreting digital information to:

filter a pre-processed signal, comprised of a desired signal component, with a respective adjacent channel interference (ACI) detection filter for each of one or more frequency ranges;

determine a presence or absence of ACI in each frequency range based on an estimated energy of a filtered signal from the respective ACI detection filter and a threshold; and

filter the pre-processed signal with a particular filter response selected from among a plurality of possible filter responses based on the determined presence or absence of ACI in each of the one or more frequency ranges.

20. A digital signal processor comprising:

an adjacent channel interference (ACI) detector configured to determine a presence or absence of ACI in each of one or more frequency ranges in a pre-processed signal comprised of a desired signal component; and

a selectable filter configured to filter the pre-processed signal with a particular filter response selected from among a plurality of possible filter responses based on the determined presence or absence of ACI in each of the one or more frequency ranges.

21. A receiver processing apparatus comprising:

means for determining a presence or absence of adjacent channel interference (ACI) in each of one or more frequency ranges in a pre-processed signal comprised of a desired signal component; and

means for filtering the pre-processed signal with a particular filter response selected from among a plurality of possible filter responses based on the determined presence or absence of ACI in each of the one or more frequency ranges.

22. A receiver unit in a wireless communication system, comprising:

a front-end unit configured to pre-process a received signal comprised of a desired signal component;

an adjacent channel interference (ACI) detector configured to determine a presence or absence of ACI in the pre-processed signal in each of one or more frequency ranges; and

a selectable filter configured to filter the pre-processed signal with a particular filter response selected from among a plurality of possible filter responses based on the determined presence or absence of ACI in each of the one or more frequency ranges.

23. The receiver unit of claim 22, wherein the ACI detector includes one or more ACI detection filters configured to filter the pre-processed signal for the one or more frequency ranges.

24. The receiver unit of claim 23, wherein the ACI detector is configured to determine the presence or absence of ACI in each frequency range based on an estimated energy of a filtered signal from the respective ACI detection filter and a threshold.

25. The receiver unit of claim 22, wherein the selectable filter is implemented as a finite impulse response (FIR) filter, and wherein the plurality of possible filter responses are provided by a plurality of sets of filter coefficients.

26. The receiver unit of claim 22, wherein the selectable filter is implemented as an adaptive filter having coefficients that are adjustable to provide the plurality of possible filter responses.

27. A terminal comprising the receiver unit of claim 22.

28. A base station comprising the receiver unit of claim 22.

29. A receiver apparatus in a wireless communication system, comprising:

means for pre-processing a received signal comprised of a desired signal component;

means for determining a presence or absence of adjacent channel interference (ACI) in the pre-processed signal in each of one or more frequency ranges; and

means for filtering the pre-processed signal with a particular filter response selected from among a plurality of possible filter responses based on the determined presence or absence of ACI in each of the one or more frequency ranges.